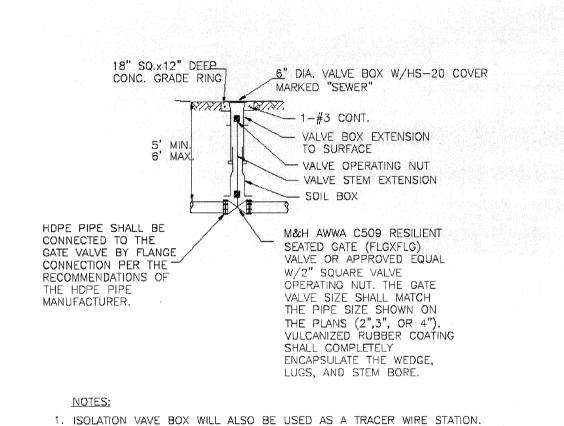
N.W. 1/4, SEC. 26, T. 21 N., R. 4 E., W.M.

MATCH BLIND FLANGE SIZE TO PIPE SIZE INSTALL FLANGE A MINIMUM OF 2" BELOW THE UNDERSIDE OF THE MANHOLE COVER. USE ONE OF THE FOLLOWING SIZE BLIND FLANGES: 2" BOLTED BLIND FLANGE OR 3" BOLTED BLIND FLANGE OR 4" BOLTED BLIND FLANGE STANDARD SEWER FRAME. GRATE, AND 24" CONE -PROVIDE CONCRETE COLLAR AROUND MANHOLE CASTING, A MINIMUM OF ONE 2" WORD "SEWER" ON OR 4" RISER RING IS REQUIRED BETWEEN MANHOLE COVER. THE COVER, FRAME, AND MANHOLE CONE SECTION FOR GRADE ADJUSTMENT. NO MORE THAN 12" OF GRADE ADJUSTMENT RINGS ARE SCH. 80 PVC UNION ALLOWED. BALL VALVE NO MORE THAN 12" BELOW - EXIST. GRADE GROUND LEVEL GROUND SURFACE INSIDE MANHOLE CONE SECTION WITHOUT STEPS (18" MIN HT.) TRANSITION FITTING WATERTIGHT PLUG W/ CONC. BLOCKING IF PIPE TO BE EXTENDED ISOLATION VALVE (SEE ISOLATION VALVE -STANDARD PLAN PSS (SEE STANDARD 03 FOR DETAIL) PLAN PSS 03 FOR SANITARY SEWER -PRECAST DONUT CONCRETE SUPPORT DETAIL) HDPE FORCE MAIN COLLAR (4"X4"). MATCH DONUT INSIDE AND OUTSIDE DIAM. SIZE TO BOTTOM (SEE PLANS FOR OF MANHOLE CONE SECTION. 1. VALVE BOX AND MANHOLE COVERS SHALL BE MARKED FOR SEWER. 2. VALVE PIG PORT WILL ALSO BE USED AS A TRACER WIRE

FORCEMAIN CLEANOUT W/PIG PORT FOR PRESSURE SYSTEM FORCEMAINS PUBLISHED STANDARD PLAN PSS-01

NOT TO SCALE



ISOLATION VALVE PUBLISHED STANDARD PLAN PSS-03

NOT TO SCALE

COVERING EXPOSED END 6" DIA. VALVE BOX W/ HS-20 COVER MARKED "SEWER" 18" SQ.x12" DEEP CONC. GRADE RING CONTINUOUS 12 GA _INSTALL CONTINUOUS GREEN SOLID CORE COPPER WARNING TAPE WHEN FORCE FORCE MAIN IS INSTALLED BY WIRE, THEN INSULATION SURFACE CUT (TYP.). WRAP WIRE AROUND FORCE MAIN -SLACK LOOPS WHEN INSTALLED BY NOTES: FOR ALL SURFACED EXCAVATED FORCE MAINS:

1. LOCATE TEST BOX OVER

CENTERLINE OF FORCEMAIN. 2. PROVIDE TEST BOXES AT INTERVALS NO GREATER

THAN 500' AND AT BENDS.

3. WIRE SPLICES TO USE WATERPROOF CONNECTORS.

4. PROVIDE 12" WIRE LOOP INSIDE VALVE BOX, TYP.

FORCEMAIN TRACER WIRE LOCATION STATION PUBLISHED STANDARD PLAN PSS-06

NOT TO SCALE

MID-STATES PLASTICS, INC. MSBCF1324-12XL (OR MSBCF1324-18XL) SERIES METER BOX WITH POLYMER-CONCRETE COVER OR APPROVED EQUAL (H-20 LOADING). THE LOCKING BOLT SOLID METER BOX COVER SHALL BE MARKED "SEWER". MAXIMUM OF TWO MODEL NUMBER MSBCF1118-12LX METER BOXES MAY BE STACKED. METER BOX INSTALL FLUSH W/ FINAL GRADE AT R/W GROUND/ROAD SURFACE STUB AND PLUG 1 1/4" SERVICE 1 1/4" SL PVC PIPE TONING WIRE FOR PLUG (DO NOT GLUE) SERVICE TO MAINLINE TONING WIRE AND WRAP CONNECTION WITH HEAT 1/4" POLYETHYLENE 14 GA. INSULATED 1 1/4" FERGUSON (FNW) 316 TWO (2) STAINLESS STEEL THREADED BALL PRESSURE PIPE WATER PIPE COPPER TONING WIRE WRAPPED AROUND PIPE. (SDR-11). ALTERNATIVE METHODS OF INSTALLATION. VALVES AND ONE (1) CHECK VALVE OR APPROVED EQUAL. USE A CENTRAL THREADED 316 STAINLESS STEEL DOUBLE SEAL TRANSITION FITTIN TO CONNECT THE HDPE PIPE TO THE SPECIAL NOTE: CONTRACTOR GATE AND CHECK VALVES. TO PROVIDE 18" MIN. CLEARANCE BETWEEN PROVIDE BOLTED FLANGE COVER WHEN OWNER SERVICE LINE AND ALL (PRIVATE) SEWER LINE IS NOT INSTALLED. WATER LINE CROSSINGS. (SEWER LINES SHALL ALWAYS ADDLE CROSS UNDER WATER LINES.)

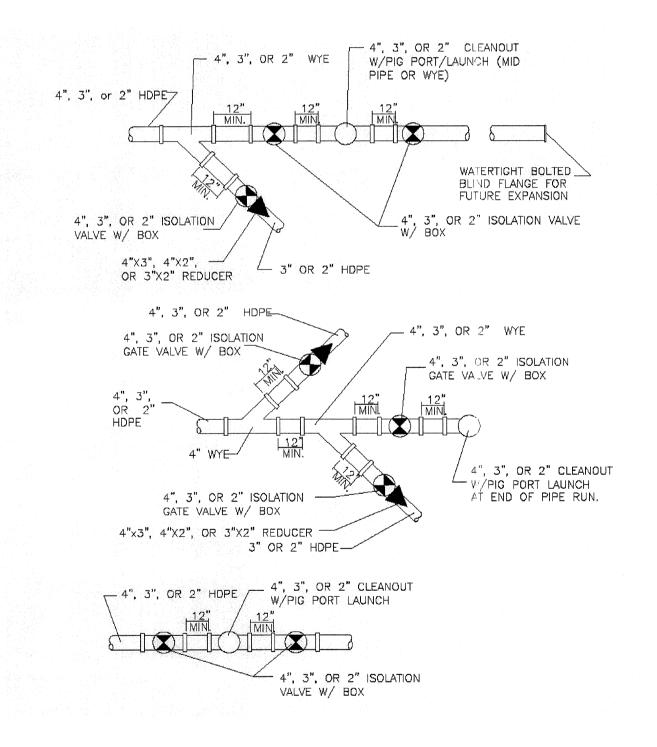
SPECIAL NOTES:

1. ALL TRENCHING WITHIN PAVEMENT AREAS SHALL BE RESTORED WITH PAVEMENT AND BASE ROCK MATCHING EXISTING SECTION. ONCE CONSTRUCTION IS COMPLETE, THE STREET SHALL BE RESTORED IN ACCORDANCE WITH THE LOCAL JURISDICTION

2. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL AND 18 INCHES VERTICAL SEPARATION BETWEEN WATER AND SEWER FACILITIES. IF MINIMUM VERTICAL SEPARATION CANNOT BE OBTAINED, THE SEWER PIPE SHALL BE CASED 1/4" THICK CONTINUOUS STEEL, DUCTILE IRON OR PRESSURE RATED PVC PIPE WITH A SDR RATIO OF 18 OR LESS, WITH ALL VOIDS PRESSURE—GROUTED WITH SAND—CEMENT GROUT OR BENTONITE, FOR A DISTANCE OF AT LEAST 10 FEET ON EACH SIDE OF THE CROSSING.

3. SEWER FORCE MAIN PIPE MATERIAL SHALL BE HIGH-DENSITY POLYETHYLENE RATED FOR TH CORRECT WORKING SYSTEM PRESSURE, AND MIN. SDR RATING OF 11 FOR 1 1/4", 2", 3", AND 4" 4. FOR A SURFACE CUT INSTALLATION, THE TONING WIRE (TRACER WIRE) CAN BE LAID ON TOP OF THE PRESSURE SEWER FORCE MAIN IN LIEU OF WRAPPING.

TYPICAL PRESSURE SEWER CONNECTION DETAIL PUBLISHED STANDARD PLAN PSS-02 NOT TO SCALE



FORCEMAIN CLEANOUT W/PIG PORT TYPICAL CONFIGURATIONS PUBLISHED STANDARD PLAN PSS-05 NOT TO SCALE

UP TO 6" PIPES, FITTINGS, VALVES AND CLEANOUTS ARE USED FOR THIS PROJECT. ALL PRESSURE SIDE SEWER LATERALS ARE 1.5" HDPE DR11 PIPES MATCHING THE MATERIALS OF THE MAIN LINES.

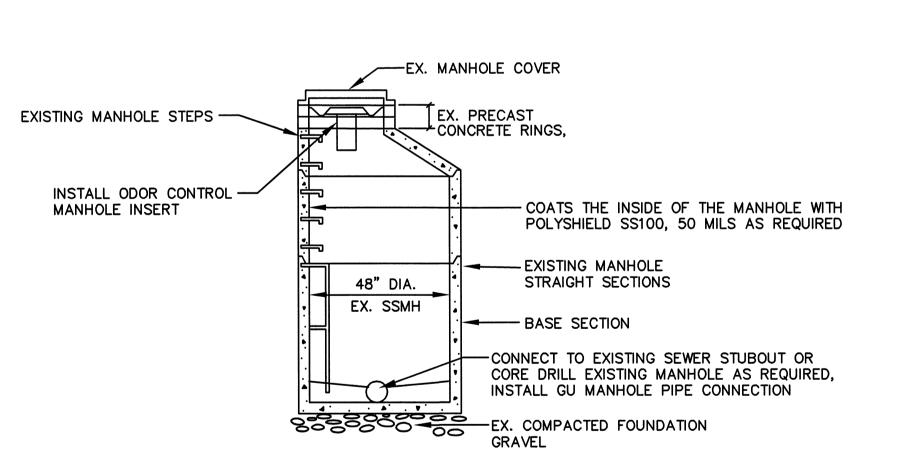
LAKEHAVEN UTILITY DISTRICT STANDARD NOTES FOR PRESSURE SEWER CONSTRUCTION

- 1. All work and materials shall conform to the Washington State Department of Transportation/Washington State Chapter American Public Works Association (WSDOT/APWA) "Standard Plans for Road, Bridge and Municipal Construction" November 1996 Edition, and the standards of Lakehaven Utility District.
- 2. Contractor shall verify the location of all utilities that may be affected by this work and shall notify appropriate utility companies to field-locate their facilities before starting any excavation, in accordance with RCW 19.122.
- 3. Connections of new pressure sewer mains to existing facilities shall be temporarily sealed off until after upstream construction is tested, cleaned, and accepted. All construction debris and water shall be removed prior to opening the seal without flushing the debris downstream.
- 4. Pressure sewer pipe material shall be as shown on the Plans, which will be one of the following and not necessarily
- High Density Polyethylene (HDPE) ASTM D-148, thermal butt-fused joints, minimum DR 11
- 5. Crushed surfacing top course (a.k.a. 5/8" crushed rock) shall be used for pipe bedding for rigid and flexible pressure sewer pipe. The material shall be placed under the pipe to a compacted depth of 4" (for 27" and smaller pipe), and to a compacted depth of 6" (for pipe greater than 27"). The material shall be placed 6" over the top of flexible pipe and

to the springline of rigid pipe. To assure uniform support, the material shall be carefully worked under the pipe

Ductile Iron ANSI A 21.51/AWWA C-151, minimum Class 52, epoxy-lined with Protecto 401 Ceramic Epoxy

- haunches with a tool capable of preventing the formation of void spaces around the pipe. 6. All trench backfill shall be compacted to 95% of relative density, or greater if so shown on the Plans or otherwise required by the road agency having jurisdiction, from the bottom of the excavation to the surface. Developer shall be responsible for all costs incurred for compaction testing.
- 7. Unless otherwise shown on the Plans, pressure sewer mains shall be installed with cover over the pipe between five feet (5') and six feet (6').
- 8. Pressure sewer mains shall not have any single bend that exceeds forty-five degrees (45°). For pipeline deflections that exceed 45°, a spool is required between multiple bends. The spool length between bends shall be a minimum of four (4) times the diameter of the pressure sewer main.
- 9. Pressure sewer mains and stubs shall be hydrostatically pressure tested at one and one-half (1½) times the working design pressure of the system or 100 psi, whichever is greater. The trench backfill shall be compacted prior to pressure testing the pipe. Side sewer stubs shall be tested at the same time as the pressure sewer mains.
- 10. All Isolation Valves, Cleanouts / Pig Ports, and Pressure Side Sewer Stubs shall conform to Lakehaven Standard
- 11. Pressure sewer mains and the side sewer stubs shall be wrapped with tracer wires, and Tracer Wire Location Stations shall conform to Lakehaven Standard Plans.
- 12. Connecting manholes shall conform to WSDOT/APWA Standard Plan B-23a, Type 1 or Type 2 with eccentric cones, and include 1-inch galvanized drop safety steps or polypropylene safety steps (Lane International Corp. Part No. P-14938) and at least one (1), and no more than five (5), four-inch (4") high adjustment rings below the frame and cover. All manhole exterior surfaces shall receive a protective coating of bituminous coal tar to a minimum thickness of 50 mils, applied at the factory. Where noted on the Plans, manhole interior surfaces shall receive a corrosion protective epoxy coating of Polyshield SS-100 (by Specialty Products, Inc. of Tacoma; 50 mils minimum thickness) or Ravin 405 (by Ravin Lining Systems of Tulsa; 100 mils minimum thickness). All coatings shall be applied in accordance with the manufacturer's instructions.
- 13. Connecting manhole frames and covers shall be cast iron, with the word "SEWER" cast in the top, shall weigh 140 to 150 pounds, and shall have a single 1-inch lift hole fitted with one 3/4" X 3" galvanized carriage bolt with burred end
- to retain the nut and a flat washer to allow for 1" bolt travel. Covers shall be 25" in diameter. 14. Concrete collars reinforced with wire mesh shall be installed per Lakehaven Standard Plan where shown on the Plans.
- 15. Connecting manhole channels shall be produced to the full depth of the associated pipe diameter, and to a width no less than the outside diameter of the associated pipe and no more than 1/2-inch in excess of the outside diameter of the associated pipe. Connecting manhole channels shall have a smooth finish. To minimize turbulence, side channels from inlet pipelines shall be curved toward the outlet pipeline to provide a smooth laminar flow transition from all inlet pipelines to the outlet pipeline. Channel material shall be a shrink-resistant grout mix, using 6 sacks per cubic yard Portland cement and 7/8" graded aggregate.
- 16. Connecting manhole shelves shall have a broom finish, and be sloped ½-inch to 1-inch per foot toward the channel.
- 17. Pipe ends of all inlet and outlet pipelines shall not extend more than 2 inches inside the connecting manhole, and all penetrations shall be smoothly grouted around the pipe with shrink-resistant grout.
- 18. No joints for flexible pipe inlets and outlets shall be within 10 feet of the connecting manhole, and pipelines shall be
- connected to the connecting manhole with PVC manhole collars. Rubber boot collars are prohibited. 19. The termini of pressure sewer stubs shall be capped and marked by a white 2X4 post labeled "Sanitary Side Sewer."



CONNECT TO EXISTING SANITARY SEWER MANHOLE #10. S-1727

NOT TO SCALE

LAKEHAVEN UTILITY DISTRICT

Sewer Plan

APPROVED FOR CONSTRUCTION SUBJECT TO CHANGES NOTED

The District's review is not a check of any dimension or quantities and will not relieve the Developer from responsibility for errors of any sort. No changes shall be made in the plans except by the

NUMAKU General Manager/District Engineer

This construction plan will expire one year from plan approval date, if construction has not commenced.

Civil Engi Planning (

12. H. a

PROJECT NO.: **05052**

DRAWN BY: **JGC**

ISSUE DATE: **09-30-05**

SHEET REV.: **08-24-10**

FORCE MAIN SANITARY SEWER **DETAILS**

05052SS20.DWG